

What is claimed is:

1. A motor comprising:

5 a stator;

a rotor having a shaft;

a sleeve bearing in contact with the rotor shaft, the sleeve bearing being fixedly secured to the stator; and

10 a movable support member axially supporting the shaft, the movable support member being movable relative to the shaft.

2. The motor as defined by claim 1 further including a housing at least in part enclosing the stator, the housing forming a recess for supporting the movable support member.

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3. The motor as defined by claim 1 wherein the movable support member is a spherical member.

4. The motor as defined by claim 3 wherein the spherical member is a ball bearing.

- 20 5. The motor as defined by claim 3 wherein the recess has a depth less than a radius of the spherical member.

- 25 6. The motor as defined by claim 1 further including a retaining washer about the shaft.

7. The motor as defined by claim 6 wherein the shaft has a lower end, the retaining washer being located between the lower end of the shaft and the sleeve bearing.

5 8. The motor as defined by claim 1 further including a rotor hub coupled to the shaft, the rotor hub being spaced from the sleeve bearing.

9. The motor as defined by claim 1 wherein the rotor includes a rotor magnet, the rotor magnet being oriented with the stator to bias the rotor toward the movable 10 support member.

10. The motor as defined by claim 1 wherein the movable support member contacts the shaft when the motor is right side up and when the motor is upside down.

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11. The motor as defined by claim 1 wherein the center of gravity of the rotor coincides with an opening in the sleeve bearing that accommodates the shaft.

12. A motor comprising:

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a stator having a sleeve bearing;
a rotor having a hub mounted to a shaft that is rotatably coupled with the sleeve bearing, the shaft having a coupled retaining member; and
a movable support member supporting the weight of the rotor to prevent contact between the retaining member and the hub.

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13. The motor as defined by claim 12 further including a housing about the stator, the housing forming a recess for retaining the support member.

14. The motor as defined by claim 12 wherein the retaining member is a washer secured to the shaft.

15. The motor as defined by claim 12 wherein the rotor includes blades for
5 moving air.

16. The motor as defined by claim 12 wherein the rotor includes a rotor magnet that normally biases the rotor toward the support member.

10 17. The motor as defined by claim 12 wherein the support member has a spherical shape.

18. The motor as defined by claim 12 wherein the stator has DC commutation circuitry.

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19. The motor as defined by claim 12 wherein the center of gravity of the rotor coincides with an opening in the sleeve bearing that accommodates the shaft.

20. A motor comprising:

20 a stator;
a rotor having a shaft;
a sleeve bearing in contact with the rotor shaft, the sleeve bearing being fixedly secured to the stator; and
movable means for axially supporting the shaft, the movable means being
25 movable relative to the shaft.

21. The motor as defined by claim 20 wherein the movable means for axially supporting includes a ball bearing.

22. The motor as defined by claim 20 further including a housing encasing the stator, the housing forming a recess for supporting the movable means for axially supporting.

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23. The motor as defined by claim 20 wherein the shaft has an attached rotor hub that is spaced from the sleeve bearing.

10 24. The motor as defined by claim 20 wherein the rotor includes means for biasing the rotor toward the movable means for axially supporting.

25. The motor as defined by claim 20 wherein the center of gravity of the rotor coincides with an opening in the sleeve bearing that accommodates the shaft.

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